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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CHERNYAK, IGOR V	
ART UNIT	PAPER NUMBER
4183	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,515	SUNDBERG ET AL.	
	Examiner	Art Unit	
	IGOR V. CHERNYAK	4183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/10/2005; 11/03/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-17** are rejected based on broadest interpretation under 35 U.S.C. 102(e) as being anticipated by **Balachandran et al. (US 6,611,515 B1)** hereinafter **Balachandran.**

3. Regarding to **claim 1, Balachandran** discloses the method for handling a data object that is to be transmitted over a link within a packet communication network (a system and method of implementing a radio link protocol completion oriented packet data communication system on Abstract), said data object being divided into at one least data unit (a data backlog is described with a media access control layer controller and transmitting a BEGIN protocol data unit on Abstract) (MAC layer converts the frames of Layer 3 into a byte stream and packs the byte stream into a series of CONTINUE frames on column 3 lines 54 - 59), comprising the steps of:

assigning a buffer for storing said data unit to be transmitted over said link (a data backlog in a media access control layer buffer a media access control layer transmitter for transmitting a BEGIN protocol data unit on column 1 line 56 - column 2 line 12);

assigning at least one buffer threshold level for said assigned buffer; determining a current buffer fill level for said buffer (if the number of new data blocks in MAC buffers (TXB0 and TXB1, FIG. 3) is smaller than a predefined threshold (NB_Tx < NB_Max) on Fig.3, 4, 11, 12, column 8 line 65 - column 9 line 16) (Fig.3, 4, 6, 7, column 6 line 55- column 7 line 62) (Fig.3, 4, 12, column 8 lines 14 - 23); and

handling the data unit that is in turn to be transmitted over the link, differently depending on where said buffer fill level for said buffer is in relation to said at least one buffer threshold level in order to minimise end-to-end delay (for higher throughput in either mode, Layer 1 125 data is mapped into symbols chosen from a 4 -level, 8 -level or 16 -level modulation based on knowledge of Layer 2 backlog on Fig.1, column 4 lines 30 - 34) (there are two possible modes of operation for ARQ mode CONTINUE frames on the downlink and uplink. The first is incremental redundancy (mode 0) and the second is fixed coding (mode 1) on column 4 lines 1 - 6) (when retrieving data for BEGIN PDU, the TCTX 192 counts the number of data blocks in a buffer (TXB0 or TXB1, FIG. 3) and determines if it should commit to the end of the transaction (NB_Tx < NB_Max and End_Tx_Flag=True) from the start or if the transaction should start as unbounded (NB_Tx = NB_Max and End_Tx_Flag = False) on Fig.3, 4, 6, 7, column 6 line 55-column 7 line 62).

4. Regarding to **claim 2, Balachandran** discloses handling the data unit further comprises the step of using a coding scheme for security coding (PDU encoders (PENC0 and PENC1) and

decoders (PDECO and PDEC1) provide channel coding/decoding for the MAC PDUs in mode 0 (incremental redundancy) or mode 1 (fixed coding). A mode 0 segment encoder (SENC0) and decoder (SDEC0) provide coding/decoding, interleaving/deinterleaving and blocking/deblocking in incremental redundancy mode of transmission on Fig.1, 3, column 5 line 45- column 6 line 14) of the data unit giving higher security for the link, if the buffer fill level is below the at least one buffer threshold level, than if the buffer fill level is above said at least one buffer threshold level (the mobile station receive controller process while a fixed coding mode ARQ transaction is in progress on Fig.3, 4, 16, column 10 lines 21 - 30) (the BEGIN PDU process 250 illustrates the initialization of the AMI, mode and the size for the transaction on Fig.4, 18, column 10 line 64- column 11 line 9) (it is appreciated that the number of blocks extracted depends on the downlink modulation on Fig.3, 4, 16, column 10 lines 31 – 46, i.e., defined modulation and coding schemes).

5. Regarding to **claim 3, Balachandran** discloses using coding schemes for security coding of the data unit giving higher security when the radio quality is worse (based on knowledge of Layer 2 backlog and channel quality feedback 130 from the receiver 135. The channel quality is measured in terms of the signal to interference plus noise ratio on Fig.1, column 4 lines 30 – 43) than at least one radio quality threshold, than when the radio quality is better than said at least one radio quality threshold (the TCTX 195, FIG. 4, on the same step, where the Begin PDU is received, indicates to the CAM 180, FIG. 3, that it selectively sent an ARQ status PDU on Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

6. Regarding to **claim 4, Balachandran** discloses polling more often for acknowledgement (TCTX 195 may selectively receive acknowledgments on Fig.3, 4, 8, 9, 12, column 8 lines 14 –

44), when the buffer fill level is below the at least one buffer threshold level than when the buffer fill level is above the at least one buffer threshold level (Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

7. Regarding to **claim 5, Balachandran** discloses giving a higher priority for the data units using said buffer compared to other data units sharing the same link, when the buffer fill level is below the at least one buffer threshold level than when the buffer fill level is above the at least one buffer threshold level (Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

8. Regarding to **claim 6, Balachandran** discloses using incremental redundancy (PDU encoders (PENC0 and PENC1) and decoders (PDECO and PDEC1) provide channel coding/decoding for the MAC PDUs in mode 0 (incremental redundancy) or mode 1 (fixed coding). A mode 0 segment encoder (SENC0) and decoder (SDEC0) provide coding/decoding, interleaving/deinterleaving and blocking/deblocking in incremental redundancy mode of transmission on Fig.1, 3, column 5 line 45- column 6 line 14) for the transmission only when the buffer fill level is above the at least one buffer threshold level (the TCRX 200, FIG. 4 determines whether the transaction is acknowledged and whether the transaction is bounded (i.e., limited to the transfer of NB_Rx Data blocks). For ARQ transactions, the TCRX 200 also determines the ARQ mode (mode 0 or mode 1) on Fig.3, 4, 15, column 10 lines 1 – 20, i.e., if NB >= NB_Max then initialize ARQ engine mode 0 (incremental redundancy) on Fig.15), when the method is used in an EDGE Based GPRS (EGPRS) system (GPRS on Fig.1, column 1 line 15 - column 2 line 16).

9. Regarding to **claim 7, Balachandran** discloses: moving the upper part of the buffer above at least one threshold to another buffer; and by treating the lower remaining part of the buffer below the at least one threshold as if the upper part had moved, already before the actual moving has taken place (on Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

10. Regarding to **claim 8, Balachandran** discloses a packet communication system arranged to handle a data object that is to be transmitted over a link (a system and method of implementing a radio link protocol completion oriented packet data communication system on Abstract), said data object being divided into at one least data unit (a data backlog is described with a media access control layer controller and transmitting a BEGIN protocol data unit on Abstract) (MAC layer converts the frames of Layer 3 into a byte stream and packs the byte stream into a series of CONTINUE frames on column 3 lines 54 - 59), comprising:

a buffer for storing said at least data unit to be transmitted over said link (a data backlog in a media access control layer buffer a media access control layer transmitter for transmitting a BEGIN protocol data unit on column 1 line 56 - column 2 line 12) wherein said buffer is assigned with at least one buffer threshold level (if the number of new data blocks in MAC buffers (TXB0 and TXB1, FIG. 3) is smaller than a predefined threshold (NB_Tx < NB_Max) on Fig.3, 4, 11, 12, column 8 line 65 - column 9 line 16) (Fig.3, 4, 6, 7, column 6 line 55- column 7 line 62) (Fig.3, 4, 12, column 8 lines 14 - 23);

a processor unit for handling the data unit that is in turn to be transmitted over the link wherein said processor unit (each SAP has a corresponding transmit buffer (TXB), segmenter

(SGM), desegmenter (DSGM), frame extractor (FRX) and transmission controller (TC). A channel access manager (CAM) 180 multiplexes the PDUs from the different transmission controllers (also known as ARQ engine) on Fig.1, 3, column 5 line 45- column 6 line 14, inherently comprises a processor unit, because a processor unit is essential for performing functions as described above) further determines a buffer fill level associated with said buffer and handles said data unit differently depending on where said buffer fill level in said buffer is in relation to said at least one buffer threshold level in order to minimise end-to-end delay (for higher throughput in either mode, Layer 1 125 data is mapped into symbols chosen from a 4 - level, 8 -level or 16 -level modulation based on knowledge of Layer 2 backlog on Fig.1, column 4 lines 30 - 34) (there are two possible modes of operation for ARQ mode CONTINUE frames on the downlink and uplink. The first is incremental redundancy (mode 0) and the second is fixed coding (mode 1) on column 4 lines 1 - 6) (when retrieving data for BEGIN PDU, the TCTX 192 counts the number of data blocks in a buffer (TXB0 or TXB1, FIG. 3) and determines if it should commit to the end of the transaction (NB_Tx < NB_Max and End_Tx_Flag = True) from the start or if the transaction should start as unbounded (NB_Tx = NB_Max and End_Tx_Flag = False) on Fig.3, 4, 6, 7, column 6 line 55- column 7 line 62).

11. Regarding to **claim 9, Balachandran** discloses to using a more secure link by using a coding scheme for security coding (PDU encoders (PENC0 and PENC1) and decoders (PDECO and PDEC1) provide channel coding/decoding for the MAC PDUs in mode 0 (incremental redundancy) or mode 1 (fixed coding). A mode 0 segment encoder (SENC0) and decoder (SDEC0) provide coding/decoding, interleaving/deinterleaving and blocking/deblocking in incremental redundancy mode of transmission on Fig.1, 3, column 5 line 45- column 6 line 14)

of the data unit giving higher security, if the buffer fill level is below the at least one buffer threshold level, then if the buffer fill level is above said at least one buffer threshold level (the mobile station receive controller process while a fixed coding mode ARQ transaction is in progress on Fig.3, 4, 16, column 10 lines 21 - 30) (the BEGIN PDU process 250 illustrates the initialization of the AMI, mode and the size for the transaction on Fig.4, 18, column 10 line 64- column 11 line 9) (it is appreciated that the number of blocks extracted depends on the downlink modulation on Fig.3, 4, 16, column 10 lines 31 – 46, i.e., defined modulation and coding schemes).

12. Regarding to **claim 10, Balachandran** discloses to use coding schemes for security coding of the data unit giving higher security when the radio quality is worse (based on knowledge of Layer 2 backlog and channel quality feedback 130 from the receiver 135. The channel quality is measured in terms of the signal to interference plus noise ratio on Fig.1, column 4 lines 30 – 43) than at least one radio quality threshold, than when the radio quality is better than said at least one radio quality threshold (the TCTX 195, FIG. 4, on the same step, where the Begin PDU is received, indicates to the CAM 180, FIG. 3, that it selectively sent an ARQ status PDU on Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

13. Regarding to **claim 11, Balachandran** discloses to poll for acknowledgement more often (TCTX 195 may selectively receive acknowledgments on Fig.3, 4, 8, 9, 12, column 8 lines 14 – 44), when the buffer fill level is below the at least one buffer threshold level than when the buffer fill level is above the at least one buffer threshold level (Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

14. Regarding to **claim 12, Balachandran** discloses to give a higher priority for the data units using said buffer compared to other data units sharing the same link, when the buffer fill level is below the at least one buffer threshold level than when the buffer fill level is above the at least one buffer threshold level (Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

15. Regarding to **claim 13, Balachandran** discloses to move the upper part of the buffer above at least one threshold to another buffer; and arranged to treat the lower remaining part of the buffer below the at least one threshold as if the upper part had moved, already before the actual moving has taken place (Fig.3 - 7, 9, 15, 16, 17, 19 - 23, column 12 line 27- column 13 line 54).

16. Regarding to **claim 14, Balachandran** discloses the unit is arranged to use incremental redundancy (PDU encoders (PENC0 and PENC1) and decoders (PDECO and PDEC1) provide channel coding/decoding for the MAC PDUs in mode 0 (incremental redundancy) or mode 1 (fixed coding). A mode 0 segment encoder (SENC0) and decoder (SDEC0) provide coding/decoding, interleaving/deinterleaving and blocking/deblocking in incremental redundancy mode of transmission on Fig.1, 3, column 5 line 45- column 6 line 14) for the transmission only when the buffer fill level is above the at least one buffer threshold level (the TCRX 200, FIG. 4 determines whether the transaction is acknowledged and whether the transaction is bounded (i.e., limited to the transfer of NB_Rx Data blocks). For ARQ transactions, the TCRX 200 also determines the ARQ mode (mode 0 or mode 1) on Fig.3, 4, 15, column 10 lines 1 – 20, i.e., if NB > = NB_Max then initialize ARQ engine mode 0 (incremental redundancy) on Fig.15) (GPRS on Fig.1, column 1 line 15 - column 2 line 16).

17. Regarding to **claim 15, Balachandran** discloses the buffer is a mobile station (MS) or packet control unit (PCU) buffer (each SAP has a corresponding transmit buffer (TXB), segmenter (SGM), desegmenter (DSGM), frame extractor (FRX) and transmission controller (TC). A channel access manager (CAM) 180 multiplexes the PDUs from the different transmission controllers (also known as ARQ engine) on Fig.1, 3, column 5 line 45- column 6 line 14) (GPRS on Fig.1, column 1 line 15 - column 2 line 16).

18. Regarding to **claim 16, Balachandran** discloses the unit is a base station, a base station controller, or a serving GPRS support node (-transaction between a base station (cell) 265 and a mobile 270 on Fig.23, column 12 lines 27 - 43) (GPRS on Fig.1, column 1 line 15 - column 2 line 16).

19. Regarding to **claim 17, Balachandran** discloses the unit is a radio network controller (system and method of implementing a radio link protocol completion process for a transaction oriented packet data communication system. The method performs the steps of determining a data backlog with a media access control layer controller and transmitting a BEGIN protocol data unit (PDU) on Fig.1, 3, column 1 line 56- column 2 line 16).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IGOR V. CHERNYAK whose telephone number is (571) 270-1957. The examiner can normally be reached on Monday - Thursday 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on 571-272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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